

## CLAIMS

1. An optical element comprising:
  - a plurality of waveguides transmitting a light;
  - a plurality of light path coupling parts coupling adjacent waveguides so as to optically couple said plural waveguides serially, wherein
    - the paths for transmitting lights through the plural waveguides are curved at least one part of said optical path coupling parts.
2. An optical element as defined in claim 1, wherein
  - an odd number of waveguides are provided as said plural waveguides, and said odd number of waveguides are disposed overlapping with each other in parallel with respect to the light transmission direction of said waveguides.
3. An optical element as defined in claim 1, wherein
  - external surfaces other than the light incident surface and the light output surface of the waveguide path comprising said waveguides and said light path coupling parts are coated by a reflection film reflecting the transmitting light.
4. An optical element as defined in claim 1, wherein
  - said light path coupling parts have inclined surfaces which

are inclined with respect to the plain vertical to the light transmission direction and are integrated with said waveguides at either or both of said adjacent waveguides.

5. An optical element as defined in claim 1, wherein

said waveguides are of a hollow structure in which either of gas or liquid and Brownian particles are sealed.

6. An optical element as defined in claim 5, wherein said Brownian particles are colloid particles.

7. An optical element as defined in claim 1, wherein

the distance along the light transmission path from the light incident surface to the light output surface satisfies the following equation (1):

$$L \geq W / \tan (\sin^{-1} (\sin (\theta / 2) / n)) \quad \dots (1)$$

W: width of the waveguide

n: refractive index inside the waveguide

$\theta$ : the minimum beam spread angle possessed by the semiconductor laser.

8. A laser light source comprising a semiconductor laser and an optical element which emits the laser light which is emitted from said semiconductor laser with transmitting the same, wherein

said optical element includes a plurality of waveguides

transmitting light, and a plurality of light path coupling parts coupling adjacent waveguides so as to optically couple said plural waveguides serially, and the path of the light for transmitting the light through the plural waveguides are curved at said optical path coupling part.

9. An optical element as defined in claim 8, wherein

there is provided a convex lens or a plano-convex lens which is disposed on an optical path between the semiconductor laser and the optical element and makes the spread angle of the laser light incident to the optical element smaller than the spread angle of the laser light that is emitted from the semiconductor laser.

10. A laser light source as defined in claim 8, wherein

a cylindrical lens is disposed on a light path between said semiconductor laser and said optical element.

11. A laser light source as defined in claim 10, wherein

the cylindrical lens is a plano-concave lens.

12. A laser light source as defined in claim 8, wherein

the light incident surface of the optical element is in a curved configuration having curvature.

13. A two-dimensional image forming apparatus comprising:

a laser light source emitting a laser light;

a space optical modulation part that modulates a laser light emitted from the laser light source; and

an illumination optical system for illuminating the laser light that is outputted from the laser light source to the space light modulation part, wherein

said laser light source has a plurality of waveguides transmitting a light, and

a plurality of light path coupling parts coupling adjacent waveguides so as to optically couple said plural waveguides serially, and

the paths for transmitting lights through the plural waveguides are curved at said optical path coupling parts.

14. A two-dimensional image forming apparatus as defined in Claim 13 wherein

there is provided a projection optical system which projects the laser light that is emitted from the space optical modulation part.